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Reversing the long-held belief that the Japanese archipelago has been rising, six years of **global positioning system (GPS)** observations have shown that many areas along the "spine" of the archipelago have in fact been subsiding, a government institute said Wednesday.

The Geographical Survey Institute of the Construction and Transport Ministry said ground level changes of the entire Japanese archipelago had been precisely measured for the first time.

The institute has been conducting the **GPS** observations since 1996 as part of nationwide studies on how the movement of tectonic plates affect the surface of the land. One of the institutes' senior researchers, Hiroshi Murakami, reported that the findings were "of considerable interest" at a meeting of the Seismological Society of Japan on Wednesday in Yokohama.

The **GPS** analyses revealed that ground levels along many coastal regions of the Pacific Ocean, the Sea of Japan and the Seto Inland Sea have been rising, Murakami said at the meeting.

However, the mountainous spine of the Japanese archipelago has been sinking, he said.

The changes in the ground levels are very minute, about one-hundredth of a millimeter over the six-year observation period, according to the findings.

Before the availability of **GPS** technology, it was thought that the inland regions of the archipelago, in particular the area ranging from Itoi River in Niigata Prefecture to Shizuoka, Shizuoka Prefecture, and another stretching from Niigata Prefecture to Kobe, were rising. The truth is quite the opposite, Murakami said.

The ground in the littoral areas around the Suruga Bay--the Tokai region that experts are predicting could experience a very powerful earthquake--also were found to be sinking, according to Murakami.

Office of Space Commercialization

Geographical observations using a **GPS** are highly accurate horizontally, but they are less useful in gauging vertical ground level changes, he said.

To ensure the accuracy of its findings, the institute carried out the **GPS** measurements for the six-year period from a network of observation spots nationwide.

The ground in most parts of the Kii Peninsula, which comprises Wakayama, Mie and Nara prefectures, and the island of Shikoku were found to be rising, he said.

"We've had two situations that bring the whole matter into very distinct focus," he said. "I'm more convinced than ever that we need to apply real attention to this situation. While there isn't as much resource available to be applied to it (from this year's budget), we're going to work hard to build a (fiscal 2004 budget) that contains sufficient resources."